<table>
<thead>
<tr>
<th>CONTENTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EDITORIAL</td>
<td></td>
</tr>
</tbody>
</table>
| 126 | Science in the Future of India  
C. N. R. Rao |
| NEWS OF THE WEEK |  |
| 130 | DOE’s Push to Train a New Generation Falters in House |
| 131 | Researchers Generally Happy With Final Stem Cell Rules |
| 132 | An Inside/Outside View of U.S. Science |
| 133 | From Science’s Online Daily News Site |
| 134 | Hughes’s Tjian Holds to a ‘Global’ Standard of Merit |
| 135 | Resignations Highlight Disagreement on Vaccines in Autism Group |
| 135 | From the Science Policy Blog |
| NEWS FOCUS |  |
| 136 | Bringing Hominins Back to Life  
Evolving Artists  
>> Science Podcast |
| 140 | Straight From the Pig’s Mouth:  
Swine Research With Swine Influenzas |
| 142 | Genomic Clues to DNA Treasure  
Sometimes Lead Nowhere |
| 144 | Take-Charge B Cells Create a Buzz |
| LETTERS |  |
| 146 | Saving African Lions  
A. Conolly  
A Standardized Response to Biological Invasions  
I. Rashid et al.  
Response  
P. E. Hulme et al.  
Neuroscientists Need Neuroethics Teaching  
B. J. Sahakian and S. Morein-Zamir |
| 147 | CORRECTIONS AND CLARIFICATIONS |
| 148 | TECHNICAL COMMENT ABSTRACTS |
| BOOKS ET AL. |  |
| 149 | Science  
P. Fara, reviewed by M. D. Gordin |
| 150 | The World of Soy  
C. M. Du Bois et al., Eds., reviewed by M. A. Grusak |
| POLICY FORUM |  |
| 151 | Nuclear Waste Management in the United States—Starting Over  
R. C. Ewing and F. N. von Hippel |
| PERSPECTIVES |  |
| 153 | Smoke and Climate Change  
J. Quaas  
>> Report p. 187 |
| 154 | How Did the Turtle Get Its Shell?  
O. Rieppel  
>> Report p. 193 |
| 155 | Sunspot Flows and Filaments  
G. Scharmer  
>> Report p. 171 |
| 156 | Predicting Fatigue Failures  
J. J. Kruzic |
| 158 | Sizing Up the Cell  
B. A. Edgar and K. J. Kim  
>> Research Article p. 167 |
| 159 | Oriented Assembly of Metamaterials  
K. J. Stebe et al. |
| REVIEW |  |
| 161 | Drug Discovery and Natural Products:  
End of an Era or an Endless Frontier?  
J. W.-H. Li and J. C. Vederas |
| BREVIA |  |
| 166 | Traction on Immobilized Netrin-1 Is Sufficient to Reorient Axons  
S. W. Moore et al.  
Advancing spinal neuron growth cones generate traction forces that can direct the trajectory of the axon. |
| CONTENTS continued >> |  |

**COVER**

Skeletons of turtle, chicken, and mouse. The turtle body plan is unusual in that the ribs are transformed into a carapace, and the scapula, situated outside the ribs in other animals, is found inside the carapace. A report on page 193 explains the evolutionary origin of this inside-out skeletal morphology.

_Drawings: Hiroshi Nagashima_
# RESEARCH ARTICLE

167 Cell Growth and Size Homeostasis in Proliferating Animal Cells

A. Tzur et al.

Lymphoblasts grow slowly after mitosis, then reach a constant exponential rate, indicating an active size-control mechanism.

>> Perspective p. 158

# REPORTS

171 Penumbral Structure and Outflows in Simulated Sunspots

M. Rempel et al.

Simulations of sunspots show that their structure and outflows can be understood in terms of convection in a magnetic field.

>> Perspective p. 155

174 Quantum Walk in Position Space with Single Optically Trapped Atoms

M. Karski et al.

A single cesium atom trapped in an optical lattice is used to illustrate a quantum walk.

178 Experimental Realization of a Three-Dimensional Topological Insulator, Bi$_2$Te$_3$

Y. L. Chen et al.

Bi$_2$Te$_3$ is identified as a three-dimensional topological insulator with a single metallic surface state.

181 Dynamics of Chemical Bonding Mapped by Energy-Resolved 4D Electron Microscopy

F. Carbone et al.

Femtosecond tracking of an electron probe beam reveals correlated electronic and nuclear motion in laser-heated graphite.

184 Manganese- and Iron-Dependent Marine Methane Oxidation

E. J. Beal et al.

Methane oxidation in marine sediments can be driven by electron acceptors like iron or manganese, not only by sulfate.

187 Consistency Between Satellite-Derived and Modeled Estimates of the Direct Aerosol Effect

G. Myhre

Observational data and modeling narrows the large range of uncertainty about how much aerosols influence climate.

>> Perspective p. 153

191 Nonvolcanic Tremor Evolution and the San Simeon and Parkfield, California, Earthquakes

R. M. Nadeau and A. Guilhem

Small repeating earthquakes increased and have become periodic on the San Andreas Fault near one end of a major historic rupture.

193 Evolution of the Turtle Body Plan by the Folding and Creation of New Muscle Connections

H. Nagashima et al.

The turtle body plan, unique among amniotes, is based on the folding of an ancestral pattern during embryogenesis.

>> Perspective p. 154

197 Antigenic and Genetic Characteristics of Swine-Origin 2009 A(H1N1) Influenza Viruses Circulating in Humans

R. J. Garten et al.

Evolutionary analysis suggests a triple reassortant avian-to-pig origin for the 2009 influenza A(H1N1) outbreak.

201 Caloric Restriction Delays Disease Onset and Mortality in Rhesus Monkeys

R. J. Colman et al.

Age-associated death and onset of pathologies are delayed by controlled caloric restriction, thus prolonging life span.

204 Discovery of Swine as a Host for the Reston ebolavirus

R. W. Barrette et al.

Respiratory infections in pigs in the Philippines are associated with a cocktail of viruses, including a monkey filovirus.

>> Science Podcast

207 Induction of Synaptic Long-Term Potentiation After Opioid Withdrawal

R. Drdla et al.

Withdrawal from opioids in rats induces an increase in synaptic strength in pain pathways and thereby enhances pain sensitivity.

210 A Functional Role for Adult Hippocampal Neurogenesis in Spatial Pattern Separation

C. D. Clelland et al.

Disruption of neurogenesis in a neuron-forming site in the brain impairs spatial memory functions in mice.

213 IRAP Identifies an Endosomal Compartment Required for MHC Class I Cross-Presentation

L. Saveanu et al.

Immunological dendritic cells contain an endocytic compartment involved in the cross-presentation of internalized antigens.

217 Hematopoietic Cytokines Can Instruct Lineage Choice

M. A. Rieger et al.

Single-cell tracking proves that physiological cytokines determine the developmental fate of hematopoietic progenitor cells.